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IS : 1739 - 1978
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Indian Standard

SPECIFICATION FOR COTTON HEALDS FOR USE IN COTTON LOOMS

(Second Revision)

UDC 677·058·12

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 1979

AMENDMENT NO. 2 OCTOBER 1992
TO
IS 1739 : 1978 SPECIFICATION FOR COTTON HEALDS FOR USE IN COTTON LOOMS

(Second Revision)

(*Page* 4, *Note under clause* 3.1, *informal table, col* 3) — Substitute '27.5 m lea' *for* '30-m lea' and indicate unit as 'kgf'.

(TX 14)

Reprography Unit, BIS, New Delhi, India

IS : 1739 - 1978
(Superseding IS : 3616-1966)

Indian Standard

SPECIFICATION FOR COTTON HEALDS FOR USE IN COTTON LOOMS

(Second Revision)

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AMENDMENT NO. 1 OCTOBER 1984

TO

IS:1739-1978 SPECIFICATION FOR COTTON HEALDS FOR USE IN COTTON LOOMS

(Second Revision)

Alterations

(*Page 6, clause 5.1*) - Substitute the following Notes for the existing Notes 1 and 2:

'NOTE 1 - The count of heald is indicative of the spacing of heald in a leaf. It is defined as the number of healds in 101.6 mm width of leaf.

NOTE 2 - No minus tolerance on the count of heald is permissible. However, on plus side, variation of up to 4 counts may be permitted.'

(TDC 29)

Reprography Unit, ISI, New Delhi, India

Indian Standard

SPECIFICATION FOR COTTON HEALDS FOR USE IN COTTON LOOMS

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 12 October 1978, after the draft finalized by the Healds and Reeds Sectional Committee had been approved by the Textile Division Council.

0.2 In this standard the requirements of heald staves given in IS : 3619-1966* have also been included (*see* Appendix A). Consequently this standard supersedes IS : 3619-1966*. It covers bigger healds used on heavier looms generally meant for weaving canvas, woollen blankets, etc. It also provides information on the permissible number of knots in the leaf of healds.

0.3 The Sectional Committee responsible for preparation of this standard felt that at least Indian textile industry should restrict to the common values of depth of heald given in Note 2 under **5.2**, since they could easily meet the total requirements of the industry.

0.4 To familiarize the industry with International System of Units (SI Units) the basic SI Units as well as the recommended SI Units for use in the textile industry are given in Appendix B.

0.4.1 Standards of Weights and Measures Act, 1976 also stipulates use of SI units.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

*Specification for wooden staves for cotton healds.

†Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes requirements of cotton healds for use on ordinary looms as well as heavy looms.

2. NOMENCLATURE

2.1 For the purpose of this standard, the nomenclature of the components of cotton healds shall be as indicated in Fig. 1.

3. MATERIAL

3.1 The cotton twine used in the manufacture of the cotton healds shall meet the requirements given in the contract or order.

NOTE — For the guidance of the manufacturers, the specifications of common cotton twines used in the manufacture of cotton healds are given below:

Resultant tex of the Heald	*Count of Twine*	*Breaking Strength* (30-m lea)	*Twist*/dm
tex	Universal (Cotton)		
250	15 tex × 16 (16/40^{s})	130	40 to 44
200	12 tex × 16 (16/50^{s})	110	41 to 46
165	10 tex × 16 (16/60^{s})	100	52 to 58
140	8·5 tex × 16 (16/70^{s})	90	55 to 61
125	7·5 tex × 16 (16/80^{s})	85	52 to 56

4. WORKMANSHIP AND FINISH

4.1 The healds shall be varnished all along the depth, except for small portion of heald near foundation bands. The depth of unvarnished portions (near foundation bands) shall not exceed 50 mm. The healds may be painted red in the middle to the depth of about 100 mm if so specified in the contract or order.

4.2 The healds should be free from painting and varnishing defects, such as lumpy, cracked and sticky surface of healds, collapsed eyes, eyes closed with excess varnish, and eyes set sideways. They should be smooth in finish and glossy in appearance. Healds should not shank, that is, the bottom leash should not separate from the top leash when subjected to a gentle force.

4.3 The minor axis of all the eyes should be set at about the same angle.

4.4 A coloured yarn (tally yarn) may be knitted within top foundation band at 20-healds intervals to indicate count of the heald.

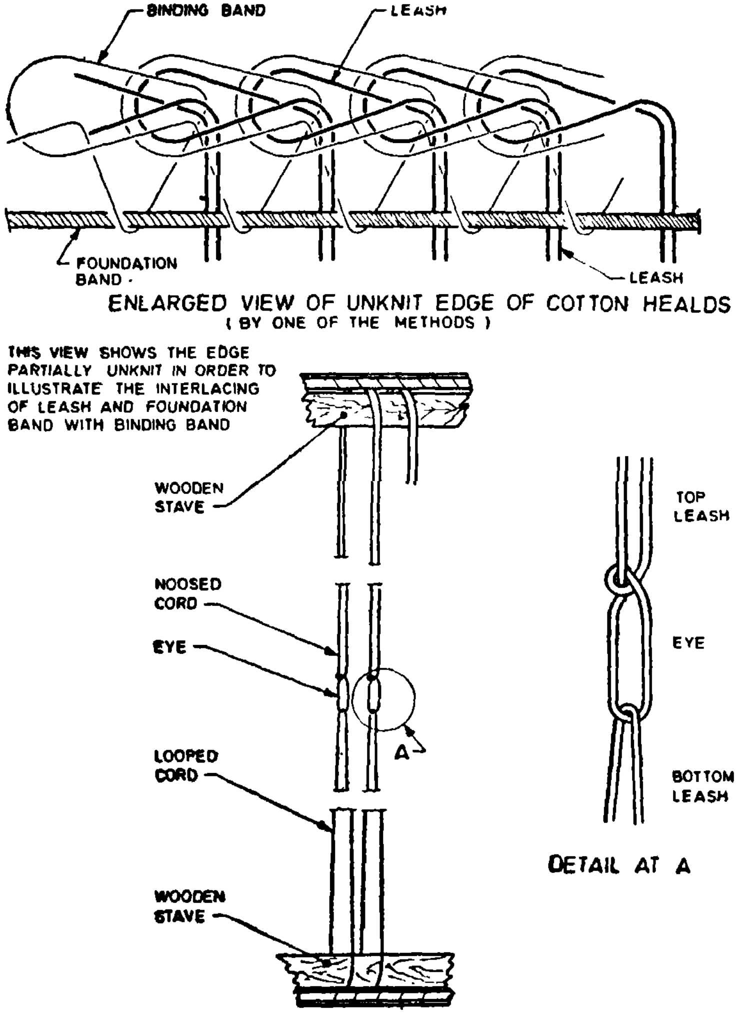
BINDING BAND
LEASH
FOUNDATION BAND
LEASH
ENLARGED VIEW OF UNKNIT EDGE OF COTTON HEALDS
(BY ONE OF THE METHODS)
THIS VIEW SHOWS THE EDGE PARTIALLY UNKNIT IN ORDER TO ILLUSTRATE THE INTERLACING OF LEASH AND FOUNDATION BAND WITH BINDING BAND
WOODEN STAVE
NOOSED CORD
EYE
A
LOOPED CORD
WOODEN STAVE
TOP LEASH
EYE
BOTTOM LEASH
DETAIL AT A

FIG. 1 COMPONENTS OF A COTTON HEALD

5. REQUIREMENTS

5.1 Count (of Healds) — The count of healds shall be as specified in the contract order.

NOTE 1 — The count (metric) of heald is indicative of the spacings of the healds in a leaf. It is defined as a value 4 times the number of healds in the 25·4 mm width of the leaf.

NOTE 2 — The conventional (fps) heald count is the value 4 times the number of healds per inch width of the leaf.

5.2 Depth of Heald — Unless otherwise specified in the contract or order, the depth of heald shall be as specified in the contract or order subject to a tolerance of ± 1 percent worked out to the nearest millimetre.

5.2.1 The depth of heald shall be measured from one foundation band to another after threading the heald on a wooden stave having thickness of 12 ± 1 mm and after applying a force just enough to straighten it.

NOTE 1 — For obtaining effective depth of heald, the observed value should be corrected for the thickness of the top and bottom foundation bands.

NOTE 2 — Though there are seven sizes (depth of heald) of cotton healds in vogue, the commonly used are 230, 280, 330 and 380 mm; the uncommon sizes are 200, 300 and 400 mm.

5.2.2 *Reference Method* — The following procedure shall be followed for measuring the depth of heald:

> Take a stand provided with two hooks (at a distance of 70 to 75 cm from each other) to support the top stave of the heald of which depth is to be measured. On the bottom stave hang two pans exactly below the two hooks on the top stave. The depth of heald is measured from outside edge of top foundation band to the outside edge of the bottom foundation band by applying the following load:

Resultant tex (Cotton Count) of Heald Twine	*Load in Each Pan* kgf
Up to 150 (above 4^s)	2
151 to 200 (3^s to 4^s)	3
201 to 300 (2^s to 3^s)	4
301 to 600 (1^s to 2^s)	5
601 and above (up to 1^s)	6

5.3 Knots

5.3.1 The number of knots in a leaf shall not exceed the following percentage of the total number of eyes in the leaf:

The Resultant Count of Twine	*Permissible No. of Knots as Percentage of Total Heald Eyes*
Up to 200 tex (above 3^s)	1·25 percent
Above 200 tex (up to 3^s)	0·75 percent

5.3.2 The knots shall be thin, tight and unprotruding, and shall be placed near foundation bands only.

5.4 Overall Width — Overall width shall not be less than the declared or marked value.

5.5 The longitudinal axis of the heald eye shall be 8·5 mm for cotton heald used on ordinary looms and 12·5 mm for those for canvas or other heavy looms, subject to a tolerance of ± 1·0 mm.

5.6 Pliability of Healds — No cracks or flakes shall appear on the varnished portion, when tested as under:

> Wrap the varnished portion of the heald twice around a rod of 8 mm diameter into a close helical form of 8 mm pitch and examine it under a magnification of × 10.

6. DESIGNATION

6.1 The healds shall be designated as under:

> Count of heald × overall width (mm) × count of twine (tex) × depth of heald (mm) × type of loom on which it is intended to be used.

7. PACKING

7.1 Each leaf of healds while it is on the stave during the process of varnishing, shall be folded and leased by the tail ends of the top and bottom foundation bands, so as to separate the odd and the even eyes. The leaves of a set so folded and leased shall be wrapped in polyethylene sheet or wax paper so that no set comes in contact with the other. A suitable number of such sets shall be tied together and made into a bundle and wrapped in waterproof paper.

8. MARKING

8.1 A label attached to the each leaf or bundle of the healds shall bear the following information:

a) Manufacturer's name, initials or trade-mark, if any;

b) Designation;

c) Number of healds in the bundle; and

d) Month and year of production.

8.1.1 Each leaf (of healds) may be marked with the ISI Certification Mark also.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

9. SAMPLING

9.1 Lot — The quantity of healds of the same designation delivered to a buyer against one despatch note shall constitute a lot.

9.2 Unless otherwise specified, the healds shall be selected for testing dimensions and workmanship as follows:

Lot Size	*Sample Size*	*Acceptance Number (Permissible Number of Defective Healds)*
Up to 100	5	0
101 ,, 150	8	0
151 ,, 300	13	1
301 ,, 500	20	1
501 ,, 1 000	32	2
1 000 ,, 3 000	50	3
3 001 ,, 10 000	80	5
Above 10 000	125	7

9.3 Pliability — Irrespective of the lot size 5 samples shall be selected for pliability test and no failure shall be permitted.

APPENDIX A

(*Clause* 0.2)

WOODEN STAVES FOR COTTON HEALDS

A-1. MATERIAL AND WORKMANSHIP

A-1.1 The staves should be straight and free from bark pocket, check or crack, comb vein, honeycombing, knot, split and borer-hole, and should be manufactured from any of the following species of well-seasoned timber:

Chir, Deodar, Fir, Kail, Spruce, Champ, Haldu, Kaim, Maple, Teak, White Cedar.

A-2. PREFERRED DIMENSIONS

A-2.1 The preferred dimensions of staves are as follows:

						Tolerance
Thickness, mm	10	12	15	18	20	± 1
Width, mm	←32→		—	—	—	± 2
	←——36——→			—	—	
	←———40 or 45———→					
	←———50 or 60———→					

APPENDIX B

(*Clause* 0.4)

SI UNITS

TABLE 1 INTERNATIONAL SYSTEM OF UNITS

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	CONVERSION
Force	newton	N	1 N = 0·101 972 kgf
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

TABLE 2 RECOMMENDED SI UNITS FOR TEXTILES

Sl No.	Characteristic	SI Unit		Application
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
1)	Length	Millimetre	mm	Fibre
		Millimetre, centimetre	mm, cm	Samples and test specimens (as appropriate)
		Metre	m	Yarns, ropes and cordages, fabrics
2)	Width	Millimetre	mm	Narrow fabrics
		Centimetre	cm	Other fabrics
		Millimetre, centimetre	mm, cm	Samples and test specimens (as appropriate)
		Centimetre, metre	cm, m	Carpets, druggets, *DURRIES* (as appropriate)
3)	Thickness	Micrometre (micron)	µm	Delicate fabrics
		Millimetre	mm	Other fabrics, carpets, felts
4)	Linear density	Tex	tex	Yarns
		Millitex	mtex	Fibres
		Decitex	dtex	Filament and filament yarns
		Kilotex	ktex	Slivers, ropes and cordages
5)	Diameter	Micrometre (micron)	µm	Fibres
		Millimetre	mm	Yarns, ropes, cordages
6)	Circumference	Millimetre	mm	Ropes, cordages
7)	Threads in cloth:			Woven fabrics (as appropriate)
	a) Length	Number per centimetre	ends/cm	
		Number per decimetre	ends/dm	
	b) Width	Number per centimetre	picks/cm	
		Number per decimetre	picks/dm	
8)	Warp threads in loom	Number per centimetre	ends/cm	Reeds
9)	Stitches in knitted cloth:			Knitted fabrics (as appropriate)
	a) Length	Courses per centimetre	courses/cm	
		Courses per decimetre	courses/dm	
	b) Width	Wales per centimetre	wales/cm	
		Wales per decimetre	wales/dm	

(*Continued*)

TABLE 4 RECOMMENDED SI UNITS FOR TEXTILES — *Contd*

SL No.	CHARACTERISTIC	SI UNIT		APPLICATION
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
10.	Stitch length	Millimetre	mm	Knitted fabrics Made-up fabrics
11.	Mass per unit area	Grams per square metre	g/m^2	Fabrics
12.	Mass per unit length	Grams per metre	g/m	Fabrics
13.	Twist	Turns per centimetre	turns/cm	Yarns, ropes (as appropriate)
		Turns per metre	turns/m	
14.	Test or gauge length	Millimetre, centimetre	mm, cm	Fibres, yarns and fabric specimens (as appropriate)
15.	Breaking load	Millinewton	mN	Fibres, delicate yarns (skeins or individual)
		Newton	N	Strong yarns (individual or skeins), ropes and cordages, fabrics
16.	Breaking length	Kilometre	km	Yarns
17.	Tenacity	Millinewton per tex	mN/tex	Fibres, yarns (individual or skeins)
18.	Twist factor or twist multiplier	Turns per centimetre × square root of tex	turns/cm × $\sqrt{\text{tex}}$	Yarns (as appropriate)
		Turns per metre × square root of tex	turns/m × $\sqrt{\text{tex}}$	
19.	Bursting strength	Newton per square centimetre	N/cm^2	Fabrics
20.	Tear strength	Millinewton	mN	Fabrics (as appropriate)
		Newton	N	
21.	Pile height	Millimetre	mm	Carpets
22.	Pile density	Mass of pile yarn in grams per square metre per millimetre pile height	g/m^2/mm pile height	Pile carpet
23.	Elastic modulus	Millinewton per tex per unit deformation	mN/tex/unit deformation	Fibres, yarns, strands

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- Jute — bags and fabrics
- Jute mill accessories
- Narrow fabrics
- National flag of India
- Nylon fabrics
- Packaging code
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